

Appln. No.: 10/780,153
Amendment Dated July 10, 2006
Reply to Office Action of April 10, 2006

GRY-121US
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Remarks/Arguments:

Claims 1-8 are pending in the above-identified application. Claims 1-3 and 5-8 were rejected under 35 U.S.C. § 102(b) as being anticipated by Tsai et al. (US 6,308,667), and claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsai et al. in view of Pischinger (US 6,184,767). These grounds for rejection are overcome by the amendment to claim 1.

Amendment

Claim 1 has been amended to recite the ballistic mode of the actuator. This amendment is supported in the Specification at least in paragraphs 0059 and 0060. No new matter is introduced by these amendments.

Rejections under 35 U.S.C. § 102(b)

Claims 1-3 and 5-8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tsai et al. (US 6,308,667). Independent claim 1, as amended, recites at least two limitations that are neither disclosed nor suggested by Tsai et al., namely:

- (1) [a]n electromechanical valve actuator for internal combustion engines, equipped with a *polarized* electromagnet; and
- (2) means to ensure that the plate operates in a ballistic mode in which displacement of the magnetic plate is controlled only by activation of a single electromagnet and the mechanical restoring action, such that the plate performs shuttle movements starting from the distant position.

As described in paragraphs 0059 and 0060 of the instant specification, Applicants disclose a electromechanical valve actuator comprising two opposing polarized electromagnets and a spring loaded magnetic plate configured to travel between the polarized electromagnets. The electromechanical valve actuator includes a third mode of operation, referred to as a 'ballistic mode with docking', which is graphically illustrated in Figure 4c. According to the third mode, a displacement of the magnetic plate between two electromagnets is controlled only by the activation of a single one of the polarized electromagnets. The electromagnets are polarized, as disclosed in paragraphs 0008 and 0011 of the instant specification, in an effort to reduce the energy necessary to maintain the plate in contact with an electromagnet. The overall power consumption of the actuator is further reduced in the ballistic mode, because only one electromagnet is used to control the displacement of the magnetic plate.

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Tsai et al. disclose an electromechanical valve control actuator comprising two electromagnets driving a magnetic plate, the movement of which controls the displacement of the valve. The magnetic plate is counterbalanced by two opposing springs. The magnetic plate has one or more teeth extending outward, the teeth being received in corresponding sockets in the cores of the corresponding electromagnets.

Tsai et al. neither disclose that the electromagnets are *polarized* (i.e. include permanent magnets), nor disclose a ballistic mode of the electromechanical valve actuator, wherein a displacement of the magnetic plate between two electromagnets is controlled only by the activation of a single polarized electromagnet, as recited in claim 1. Tsai et al. therefore fail to disclose or suggest every element of Applicants' claimed invention, as recited in claim 1.

Accordingly, for the foregoing reasons, Applicants respectfully submit that independent claim 1, as amended, is patentable over Tsai et al. and should be allowed. Claims 2, 3 and 5-8 are dependent upon claim 1, and therefore should also be allowed at least as dependent upon an allowable base claim. Reconsideration of claims 1-3 and 5-8 is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsai et al. in view of Pischinger et al. (US 6,184,767). Claim 4 is dependent upon independent claim 1. As mentioned above, Tsai et al. fail to disclose or suggest every element of Applicants' claimed invention, as recited in claim 1.

Pischinger et al. teach an electromagnetic actuator comprising two electromagnets, and a spring loaded armature movable between the electromagnets. Pischinger fails to overcome the deficiencies of the Tsai et al. reference, as Pischinger applies to claim 4. Pischinger et al. neither disclose that the electromagnets are *polarized*, nor do they disclose a ballistic mode of the electromechanical valve actuator, wherein a displacement of the magnetic plate between two electromagnets is controlled only by the activation of a single polarized electromagnet, as recited in claim 1. Reconsideration of claim 4 is respectfully requested.

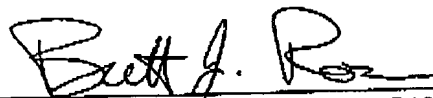
GRY-121US

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Conclusion

In view of the foregoing amendments and remarks, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1-8.

Respectfully submitted,



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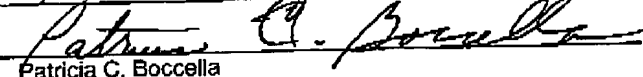
Dated: July 10, 2006

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